MATH TEST-TAKING STRATEGIES PRACTICE PACKET

* Quadratic Equations
* Factoring Polynomials
*Write the Equation of a Line Given Two Points
* Converting to Slope-Intercept Form
* Graphing Slope Intercept Form
* Multiple Choice Strategies
* Parallel & Perpendicular Equations

QUADRATIC EQUATIONS: USING THE CALCULATOR: $x^2 + 5x + 6 = 0$

$$ax^2 + bx + c = 0$$

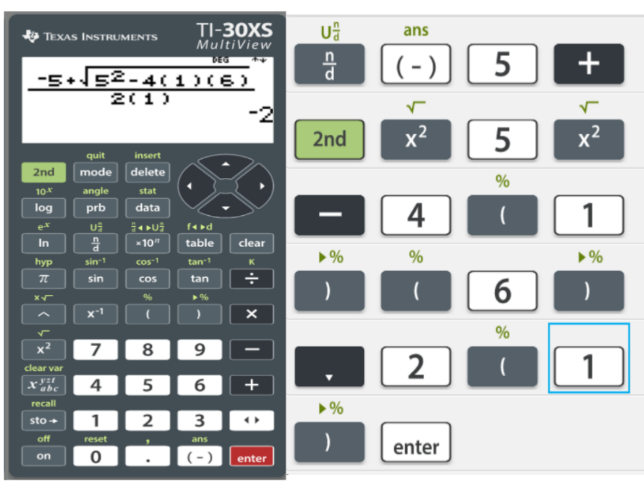
$$1x^2 + 5x + 6 = 0$$

$$x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$$

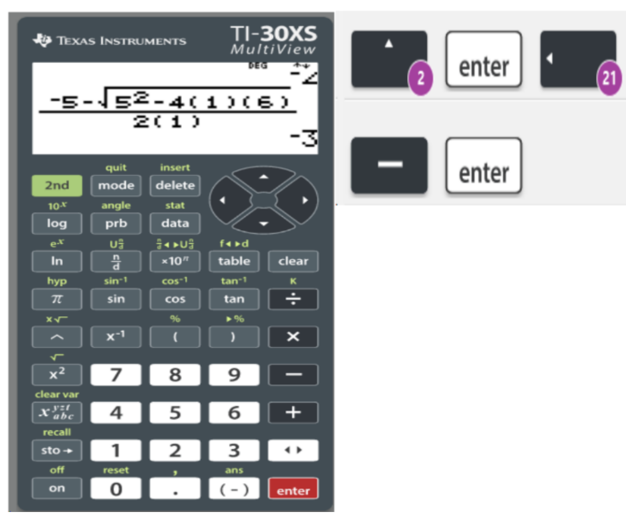
$$x = \frac{-5 \pm \sqrt{5^2 - 4(1)(6)}}{2(1)}$$

x= -2, -3

x= -2



x = -3



$$ax^2 + bx + c = 0$$

$$x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$$

$x^2 + 5x + 6 = 0$

$x^2 + 11x + 18 = 0$

$x^2 - 3x - 28 = 0$

$x^2 - 2x - 15 = 0$

$2x^2 - 9x - 17 = 64$

$x^2 + 6x + 4 = -1$

$x^2 + 10x = -16$

$4x^2 + 2x - 6 = 24$

$2x^2 + 13x - 6 = 1$

$2x^2 - 8x = 10$

$x^2 - 2x - 2 = 22$

$x^2 + 13x + 32 = -8$

FACTORING POLYNOMIALS USING THE CALCULATOR

Quadratic Equation	Factoring Trinomial
$n^2 + 4n - 12 = 0$ $n = 2, -6$	$n^2 + 4n - 12$ $(n-2)(n+6)$
Quadratic Equation	Factoring Trinomial
$3p^2 - 2p - 5 = 0$ x= 5/3, -1	$3p^2 - 2p - 5$ $(3p-5)(p+1)$

$$\frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$$

Step 1: Set up the two sets of parentheses and place the variable in each one.

$$n^2 + 4n - 12$$

(n)(n)

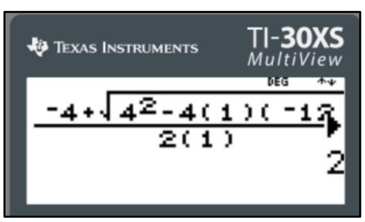
Step 2: Label the, b, and c (just like you would in a quadratic equation

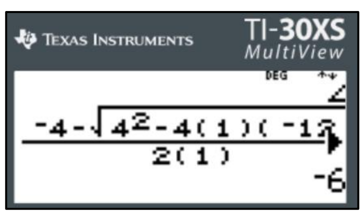
a b c

$$n^2 + 4n - 12$$

(n)(n)

Step 3: proceed to solve like a quadratic equation by using the quadratic formula.





Step 4: Whatever answer the calculator gives you, write opposite inside the parentheses.

a b c

$$n^2 + 4n - 12$$

(n - 2)(n + 6)

$n^2 + 4n - 12$

$k^2 - 13k + 40$

$p^2 + 3p - 18$

$n^2 - n - 56$

$6x^2 + 37x + 6$

$3p^2 - 2p - 5$

$2v^2 + 11v + 5$

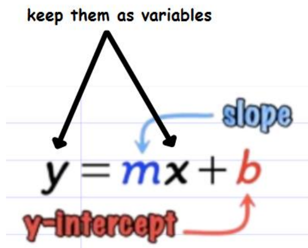
$7a^2 + 53a + 28$

$6x^2 + 7x - 49$

WRITING AN EQUATION OF A LINE GIVEN TWO POINTS

USING THE CALCULATOR

(2, 8) and (1, 3)

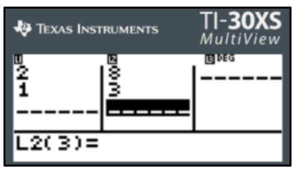


$y = 5x - 2$

Step 1: Label your coordinates.

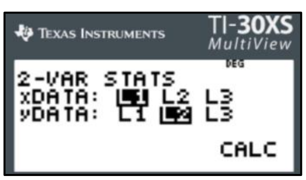
(x1, y1) (x2, y2)
(2, 8) and (1, 3)

Step 2: Press the Data button and place the X numbers in the first column and the Y numbers in the second column.

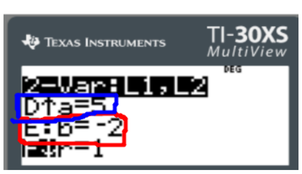


Step 3: Press the 2nd button and then the data button. Scroll down and select the “2: 2-variable stats” then press Enter.

Step 4: Scroll down to Calculate and press Enter.



Step 5: Scroll down to letters “D” and “E”



Step 6: Write your equation of a line in slope intercept form, the “D” number is the slope. The “E” number is the y-intercept.

$y = 5x - 2$

2 points

(2, 8) and (1, 3)

(0, –8) and (–1, –1)

(–1, 0) and (4, –5)

(9, –1) and (–3, 7)

(–3, 5) and (6, –7)

(-5,-6) and (5,-3)

(3, 0) and (–4, –7)

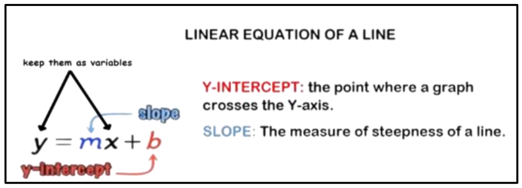
(–2, 9) and (–7, 8)

(–7, –4) and (–5, –6)

2 points

CONVERT EQUATIONS OF A LINE SLOPE INTERCEPT FORM, MINIMAL CALCULATOR USE

$3y - 15 = -6x$ ➡



➡ $y = -2x + 5$

EXAMPLE 1

Step 1: Draw a line to represent the "street" and identify which side the y-variable is on. Use inverse operations to move any **other** term from that side to the other side of the equation. This could be the term without the x-variable or the term with the x-variable. In this example, it's the term without the x-variable.

$$\begin{aligned} 3y - \cancel{15} &= -6x + 15 \\ +\cancel{15} & \\ \hline 3y &= -6x + 15 \end{aligned}$$

Step 2: If there is a coefficient (number) in front of the y-variable, divide all terms—both the y-term, the x-term, and the constant—by that number.

$$\begin{aligned} 3y - \cancel{15} &= -6x + 15 \\ +\cancel{15} & \\ \hline \frac{3y}{3} &= \frac{-6x}{3} + \frac{15}{3} \\ \hline y &= \underbrace{\boxed{-2}}_{\text{slope}}x \underbrace{\boxed{+5}}_{\text{y intercept}} \end{aligned}$$

Step 3: If necessary, rearrange the equation into slope-intercept form. (Note: In this example, rearrangement was not needed.)

$$\boxed{y = -2x + 5}$$

EXAMPLE 2

Step 1: Draw a line to represent the "street" and identify which side the y-variable is on. Use inverse operations to move any **other** term from that side to the other side of the equation. This could be the term without the x-variable or the term with the x-variable. In this example, it's the term without the x-variable.

$$-30$$

$$7x = -5y + 30$$

$$-30$$

$$7x - 30 = -5y$$

Step 2: If there is a coefficient (number) in front of the y-variable, divide all terms—both the y-term, the x-term, and the constant—by that number.

$$-30$$

$$7x = -5y + 30$$

$$-30$$

$$\frac{7x}{-5} - \frac{30}{-5} = \frac{-5y}{-5}$$

$$\boxed{-\frac{7}{5}}x \ \boxed{+6} = y$$

slope

y Intercept

Step 3: Rearrange the equation into slope-intercept form.

$$y = -\frac{7}{5}x + 6$$

PRACTICE:

$3y - 15 = -6x$ $\quad$ $7x = -5y + 30$ $\quad$ $2y - 6 = -6x$ $\quad$ $-14x + y = 7$

Convert

EXAMPLE 3

Step 1: Draw a line to represent the "street" and identify which side the y-variable is on. Use inverse operations to move any **other** term from that side to the other side of the equation. This could be the term without the x-variable or the term with the x-variable. <u>In this example, the y-variable is already isolated, nothing needs to move over.</u>

$$\boxed{9x + 35 = -5y}$$

Step 2: If there is a coefficient (number) in front of the y-variable, divide all terms—both the y-term, the x-term, and the constant—by that number.

$$\frac{9x}{-5} + \frac{35}{-5} = \frac{-5y}{-5}$$

$$\underbrace{\boxed{\frac{-9}{5}}}_{\text{slope}}x\underbrace{\boxed{-7}}_{\text{y Intercept}} = y$$

Step 3: Rearrange the equation into slope-intercept form.

$$\boxed{y = -\frac{9}{5}x - 7}$$

PRACTICE:

$9x + 35 = -5y$

$-3x - 2 = 2y$

$\frac{5}{3}y = -(x - 5)$

$-2(2x + y) = 28$

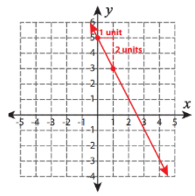
$12y = \frac{8x - 48}{3}$

$\frac{3(x - y)}{2} = 9$

Convert

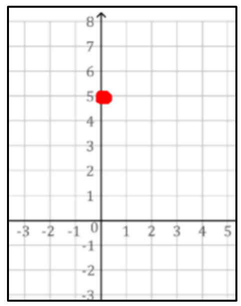
GRAPHING EQUATIONS OF A LINE SLOPE INTERCEPT FORM

$3y - 15 = -6x$ ➡ **y = -2x + 5** ➡



Step 1: Identify the y-intercept (in this example, its 5) and place a point at that value on the y-axis.

y = -2x + 5 ➡

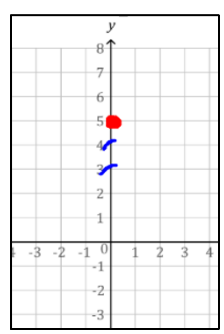


Step 2: If the slope (the number next to x) is not a fraction, rewrite it as a fraction with a denominator of 1. This gives you your rise (numerator) and run (denominator).

y = -2x + 5 ➡ $m = \frac{\overset{-2}{\text{rise}}}{\underset{1}{\text{run}}}$

Step 3: Starting from the y-intercept (5), follow the rise by moving up if the numerator is positive or down if it's negative. In this example, the numerator is -2, so move down 2 units.

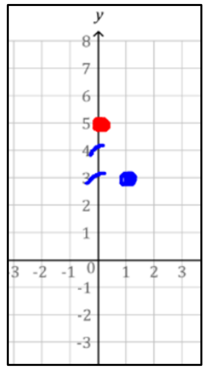
y = -2x + 5 ➡ $m = \frac{\overset{-2}{\text{rise}}}{\underset{1}{\text{run}}}$ ➡



Step 4: From the new point, follow the run by moving to the right based on the denominator. In this example, the denominator is 1, so move to the right 1 unit and place a point.

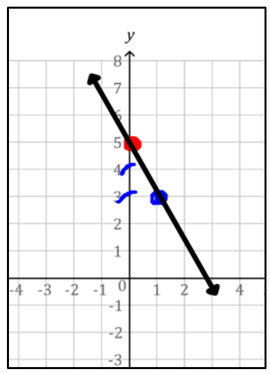
Graph

y = -2x + 5 ➡ $m = \dfrac{\overset{-2}{\text{rise}}}{\underset{1}{\text{run}}}$ ➡



Step 5: Connect the points to form a straight line.

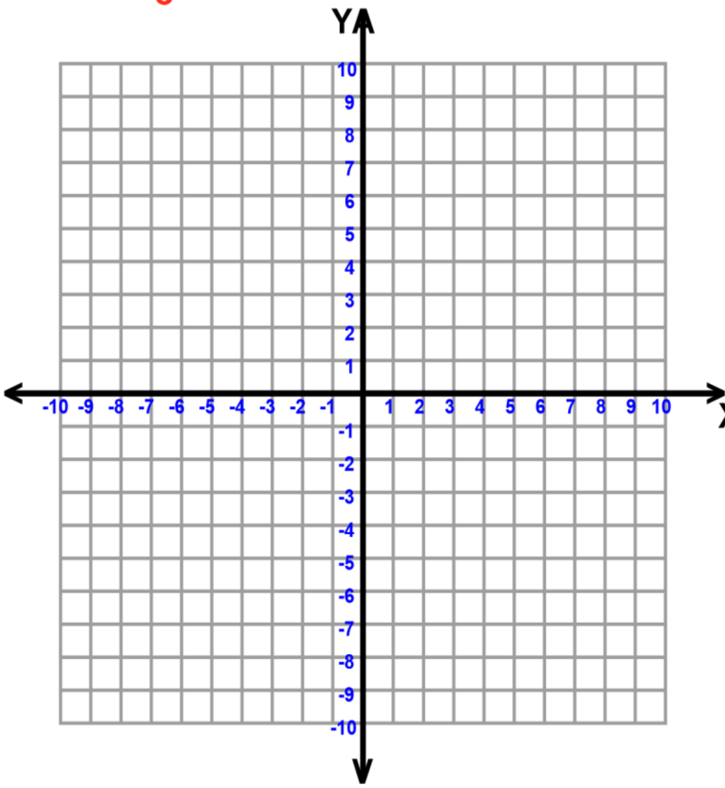
y = -2x + 5 ➡ $m = \dfrac{\overset{-2}{\text{rise}}}{\underset{1}{\text{run}}}$ ➡



Graph

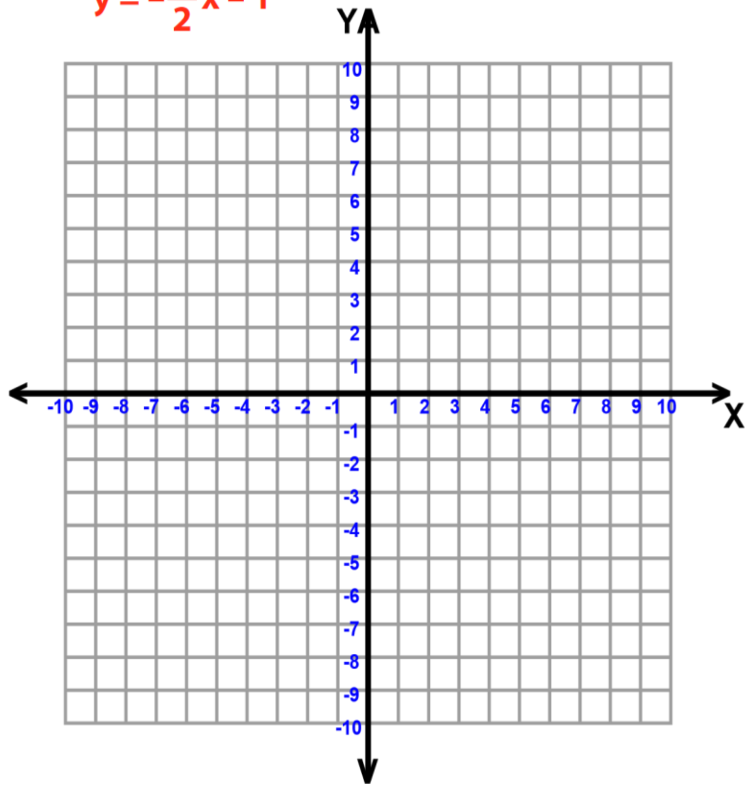
$-5x + 6y = 12$

$y = \frac{5}{6}x + 2$



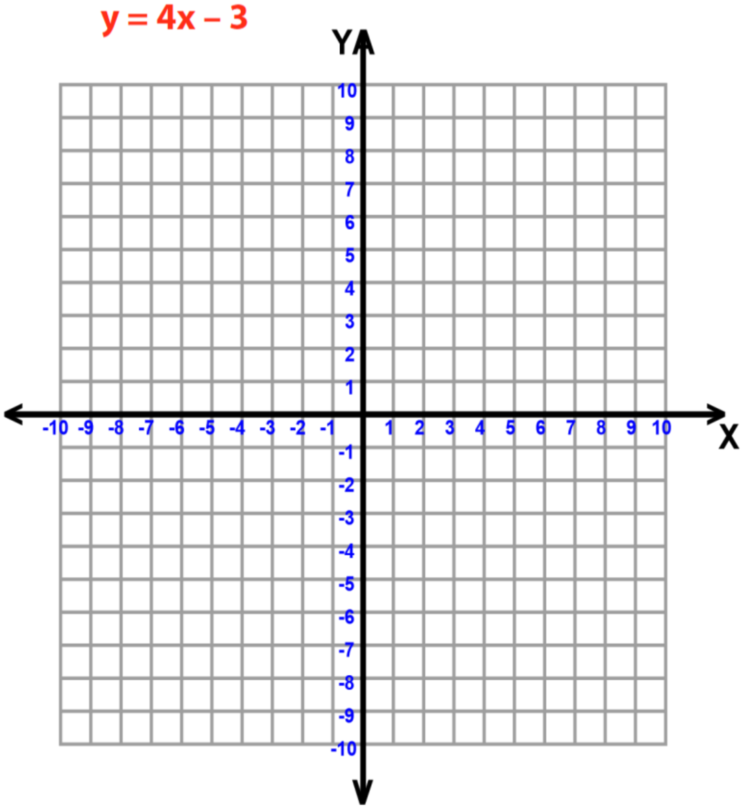
$-3x - 2 = 2y$

$y = -\frac{3}{2}x - 1$



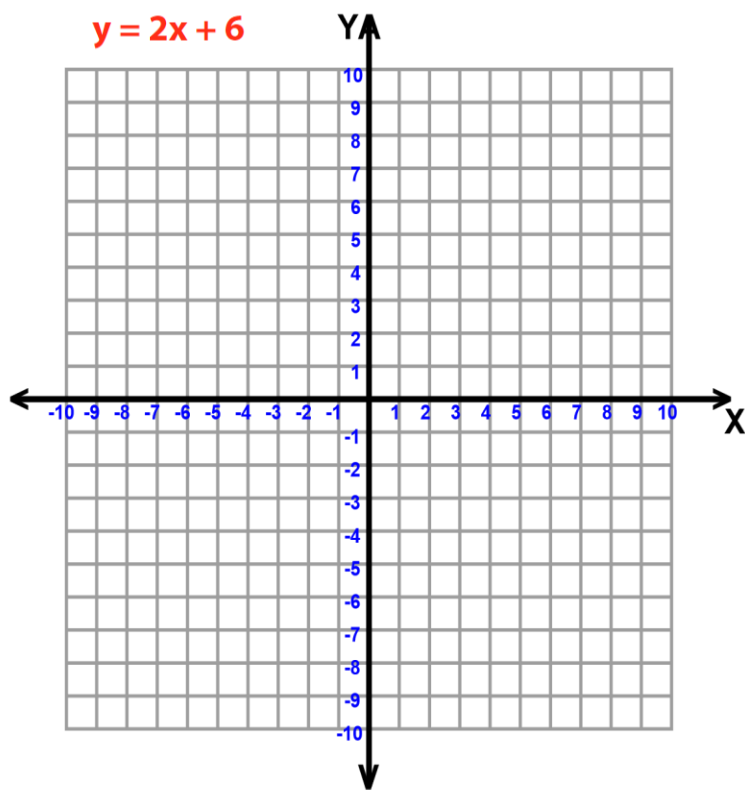
$-y = -4x + 3$

$y = 4x - 3$



$24 = 4y - 8x$

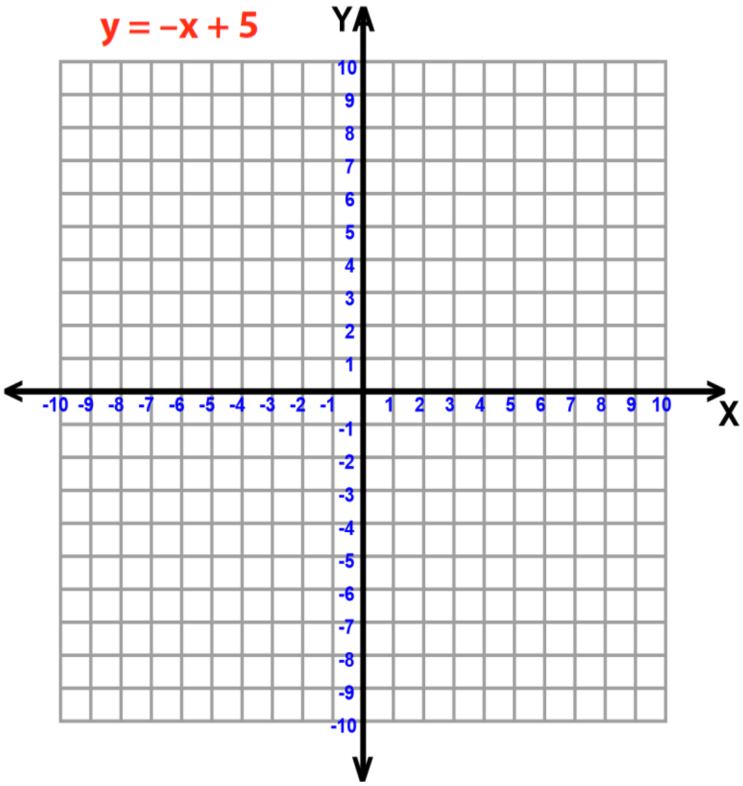
$y = 2x + 6$



Graph

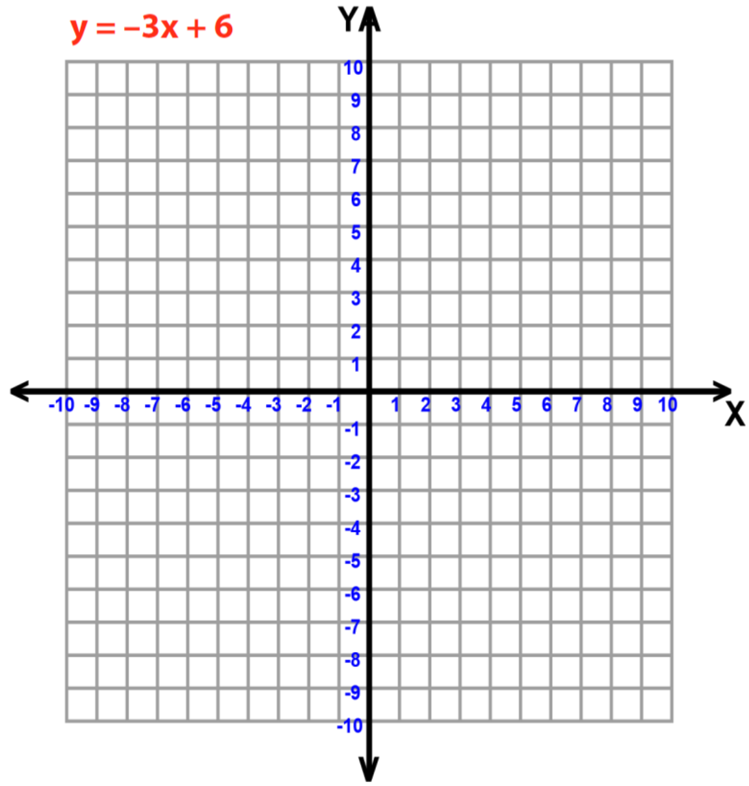
$x - 5 = -y$

$y = -x + 5$



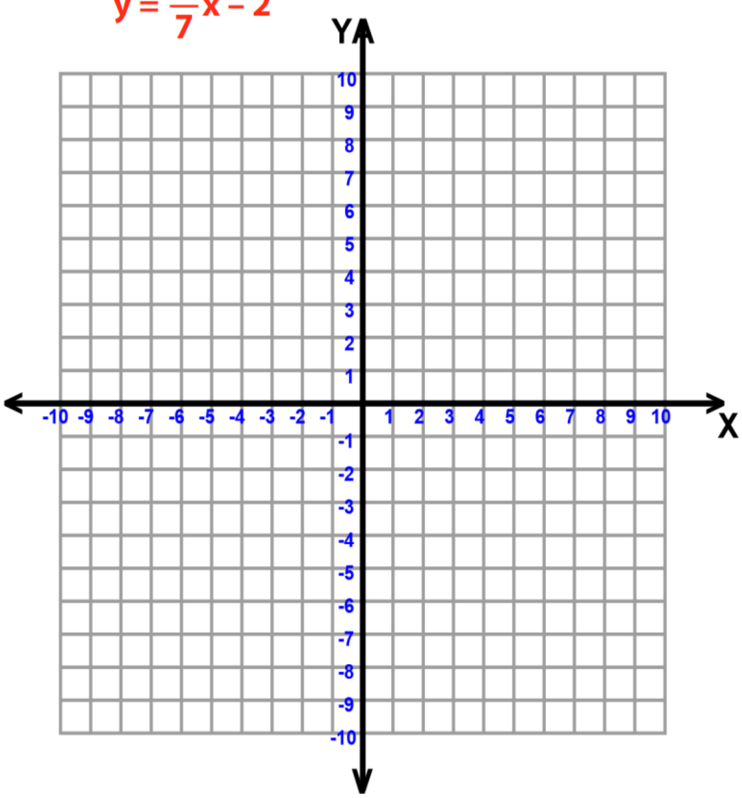
$12 = 2y + 6x$

$y = -3x + 6$



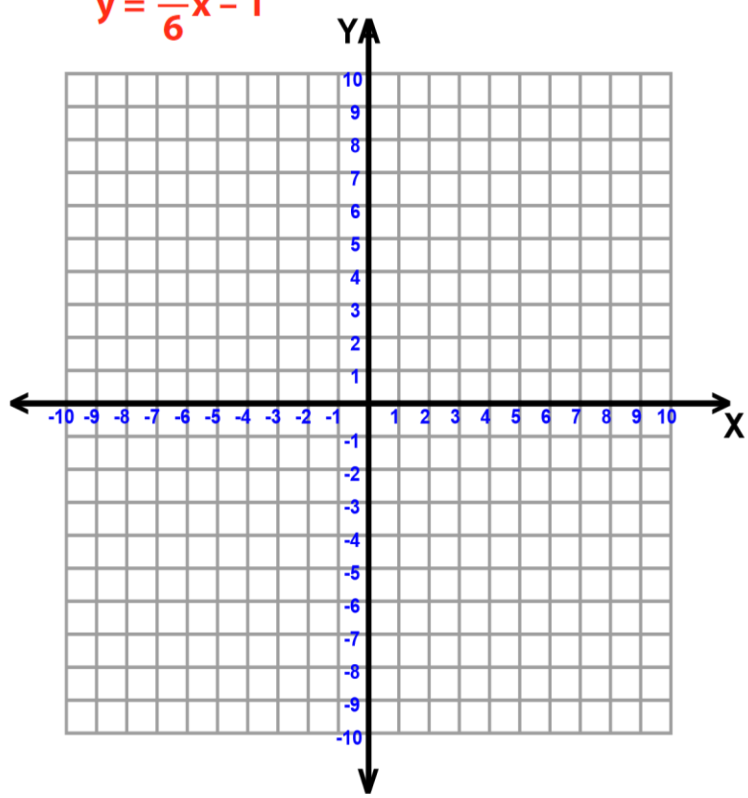
$7y = 2x - 14$

$y = \frac{2}{7}x - 2$



$6y + 6 = x$

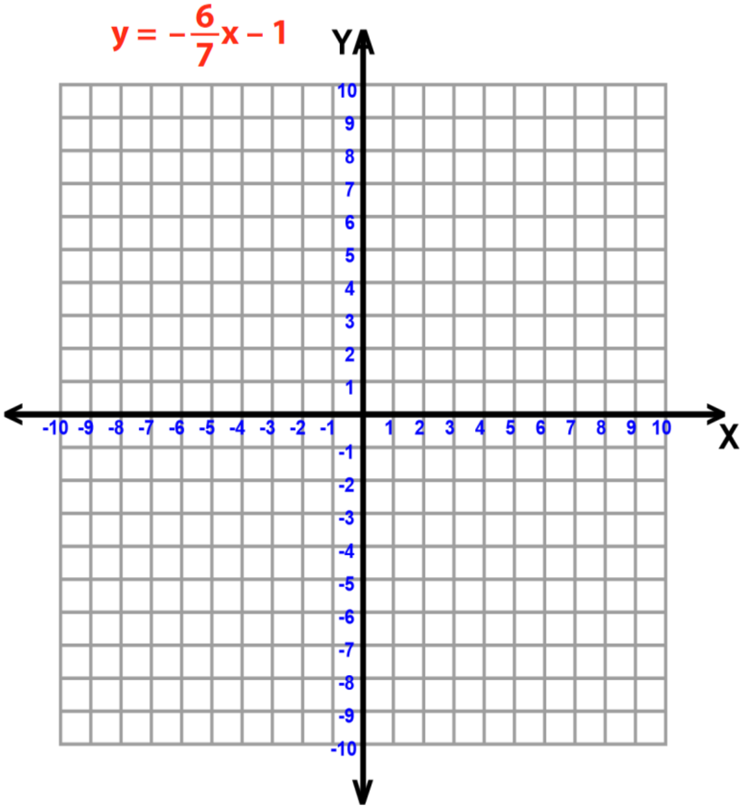
$y = \frac{1}{6}x - 1$



Graph

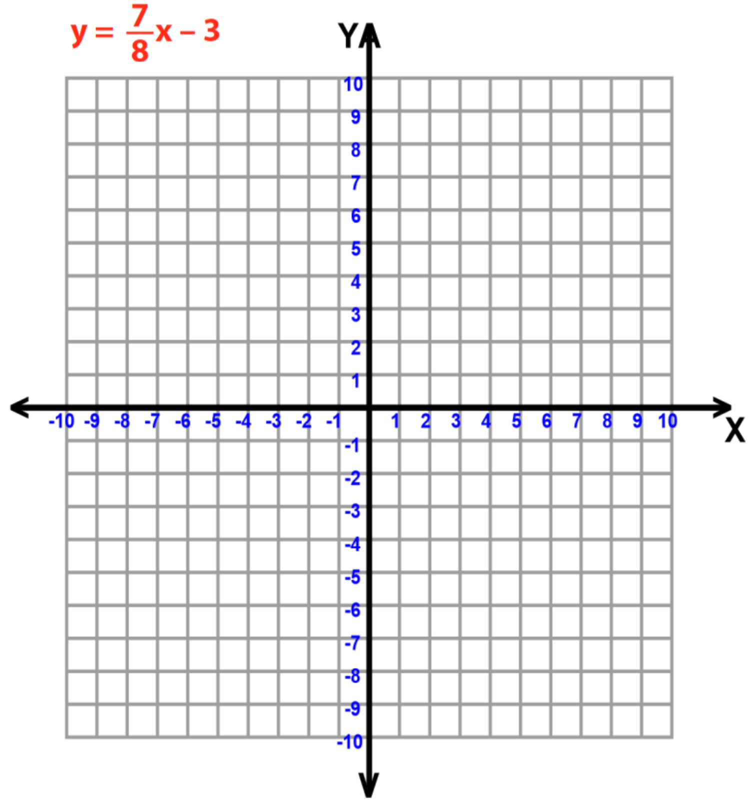
$6x = -7y - 7$

$y = -\frac{6}{7}x - 1$



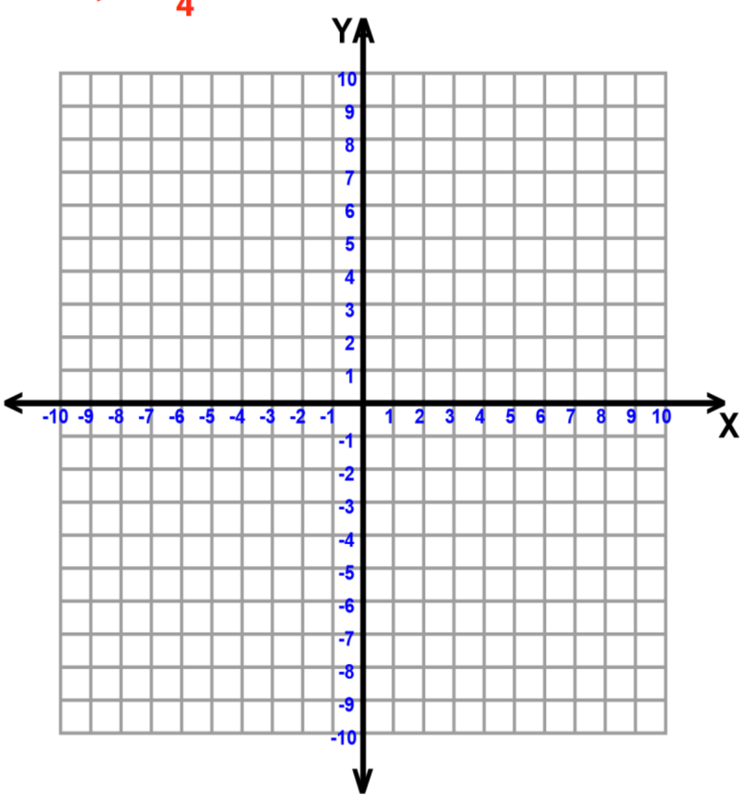
$-8y - 24 = -7x$

$y = \frac{7}{8}x - 3$



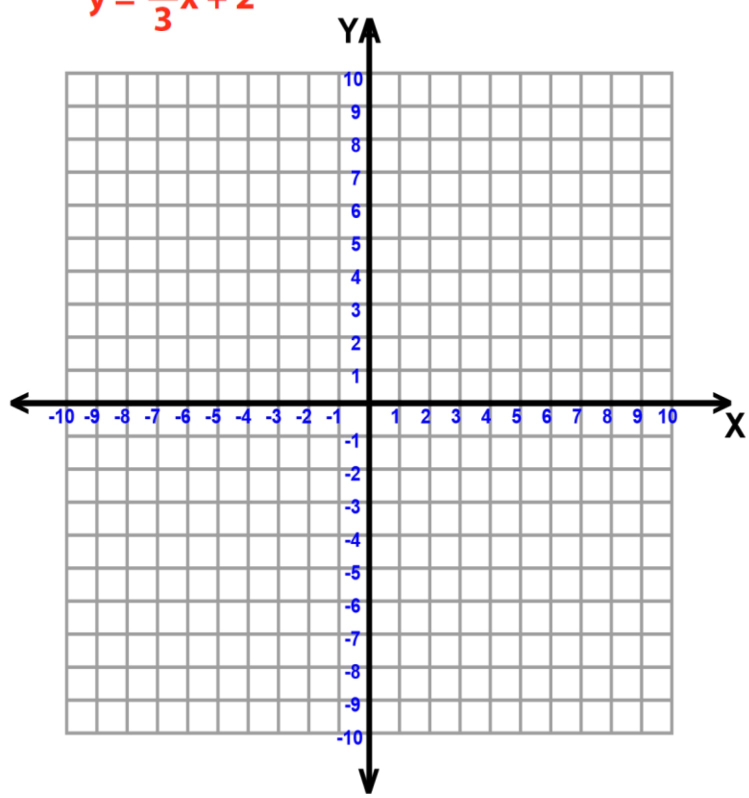
$-4y = 3x + 8$

$y = -\frac{3}{4}x - 2$



$2x - 3y = -6$

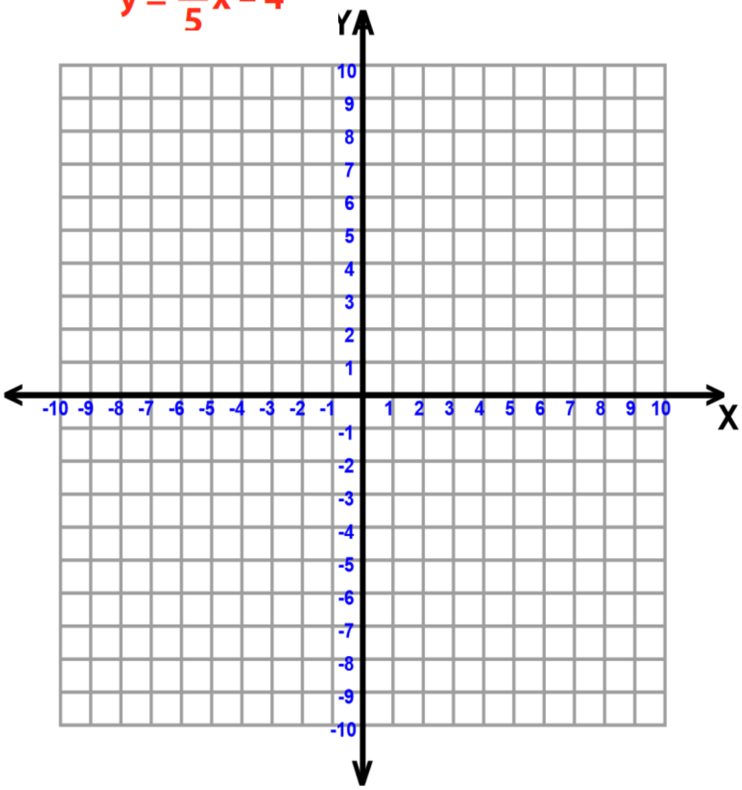
$y = \frac{2}{3}x + 2$



Graph

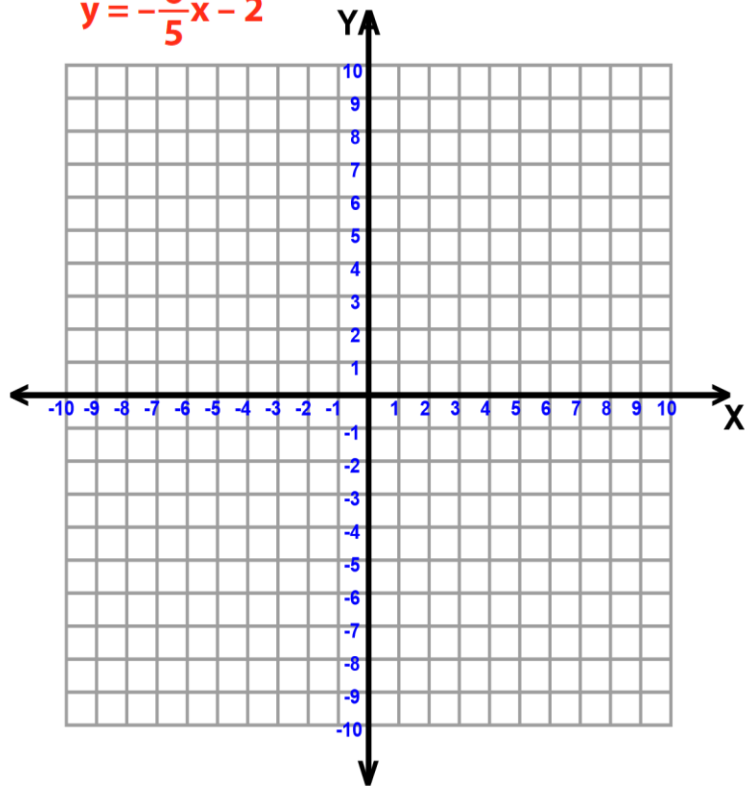
$-20 = -4x + 5y$

$y = \frac{4}{5}x - 4$



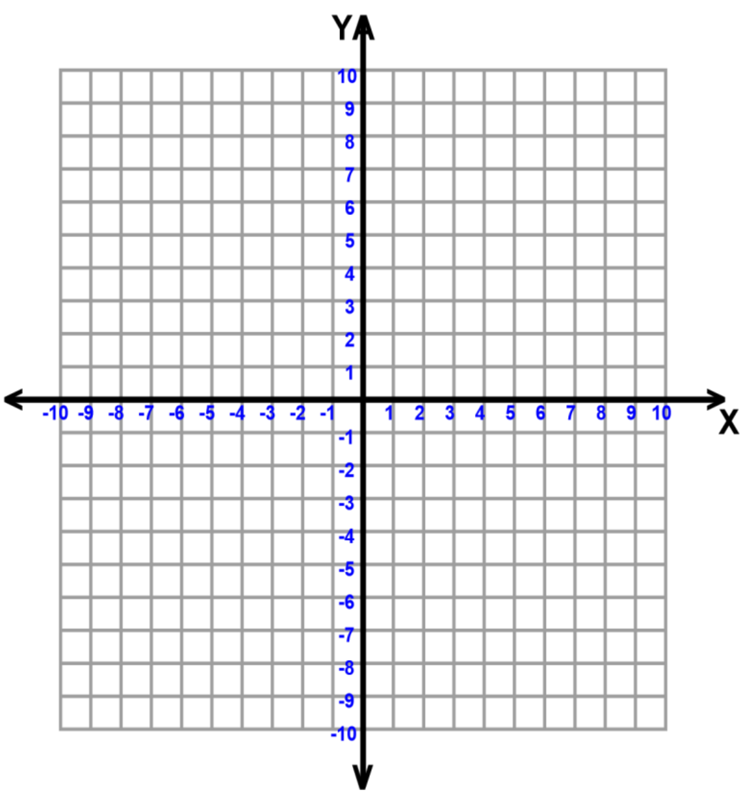
$-10 = 6x + 5y$

$y = -\frac{6}{5}x - 2$



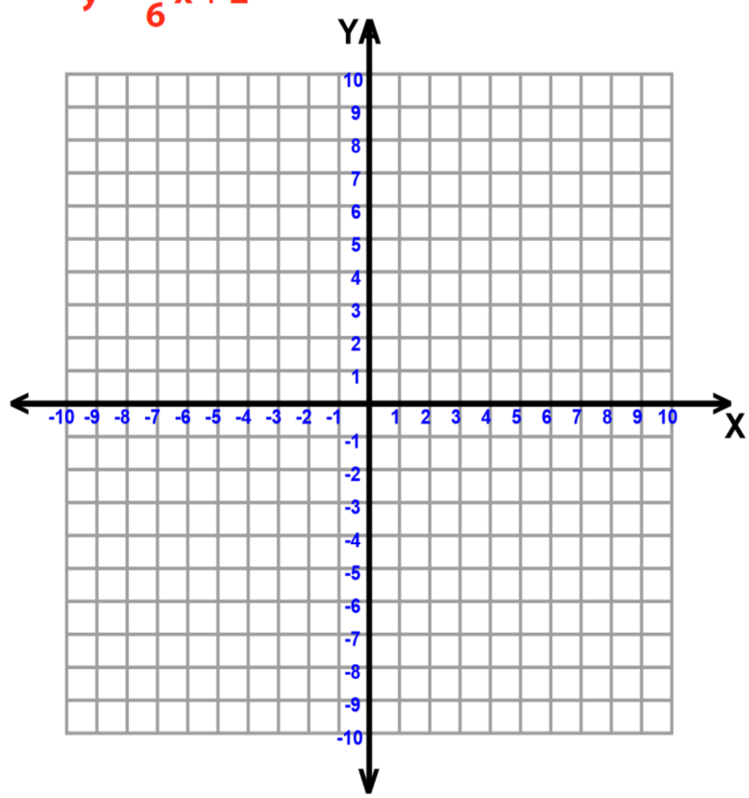
$7x = -5y + 30$

$y = -\frac{7}{5}x + 6$



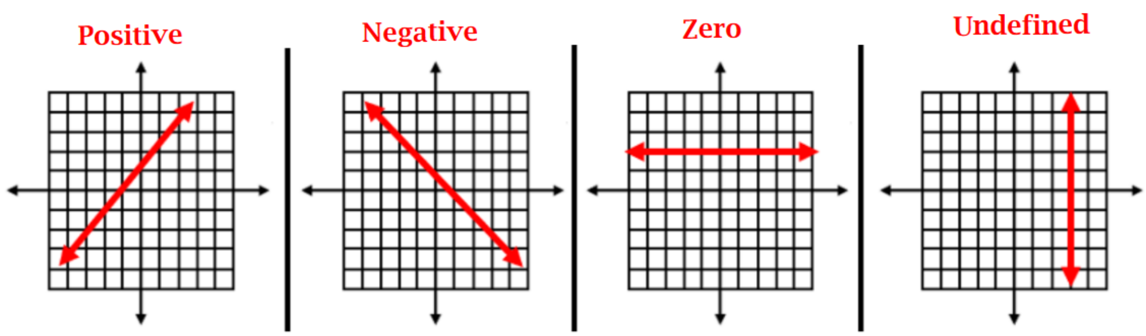
$-6y + 12 = -5x$

$y = \frac{5}{6}x + 2$



GRAPHING MULTIPLE CHOICE STRATEGIES: SAVE TIME!

*On the GED Math Exam, test-takers won't need to draw the graph of a line themselves. Instead, they will be given multiple-choice options and must choose the graph that matches the given equation. If a test-taker understands how to manually graph a line, these three simple strategies can help save time when evaluating the answer choices.

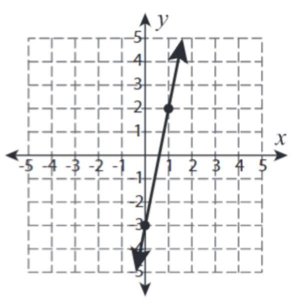


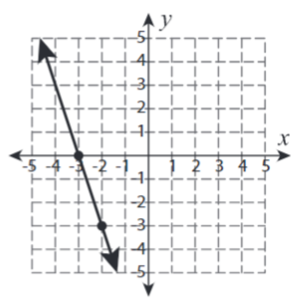
Strategy 1: Determine if the slope is positive or negative. Cross of any that do not meet the criteria.

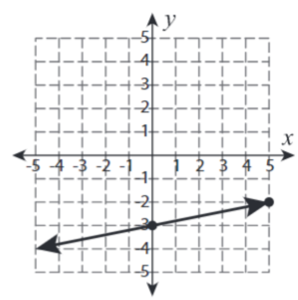
Strategy 2: Determine the slope number and identify that point on the y-axis. Cross off any that do not meet the criteria.

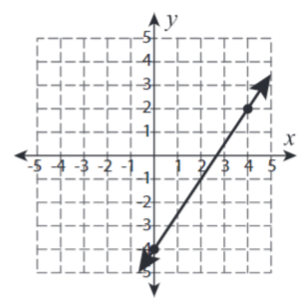
Strategy 3: If two or more options remain, do the rise/run to determine which line matches the second point.

Which of the following graph represents the equation $y = 5x - 3$?

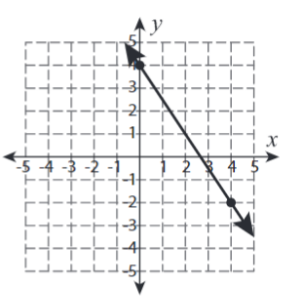
a) 

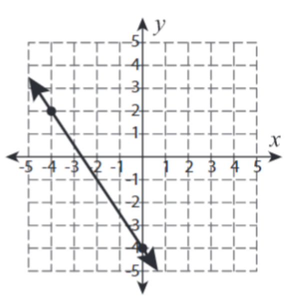
b) 

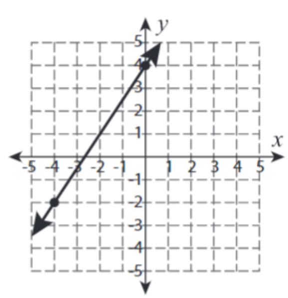
c) 

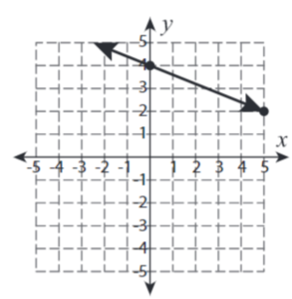
d) 

Which of the following graph represents the equation $y = -\frac{2}{5}x + 4$?

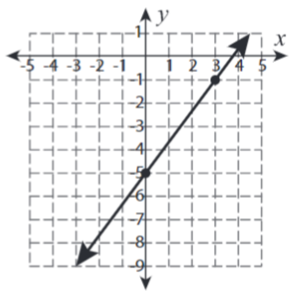
a) 

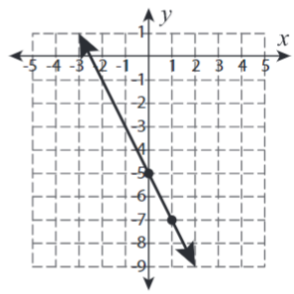
b) 

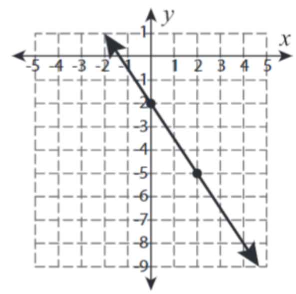
c) 

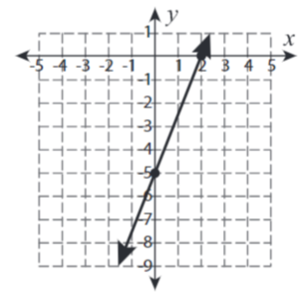
d) 

Which of the following graph represents the equation $y = -2x - 5$?

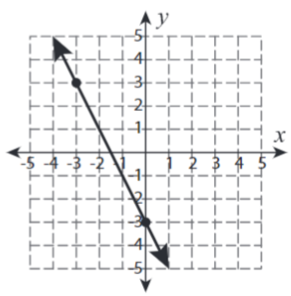
a) 

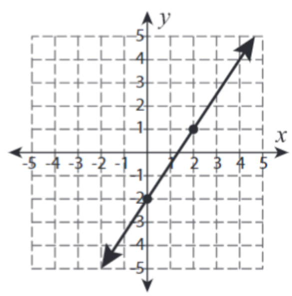
b) 

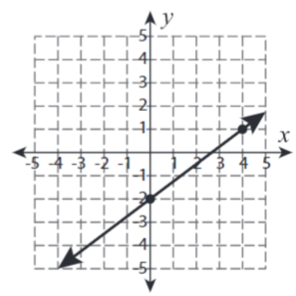
c) 

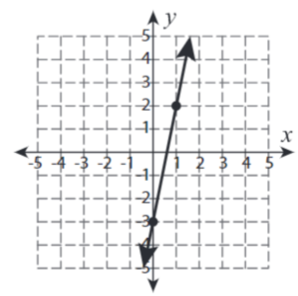
d) 

Which of the following graph represents the equation $y = \frac{3}{4}x - 2$?

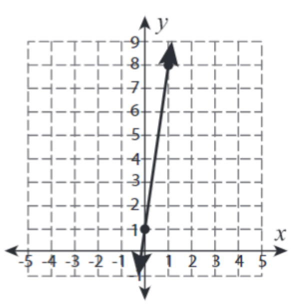
a) 

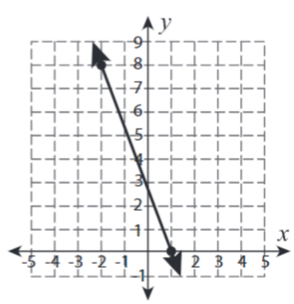
b) 

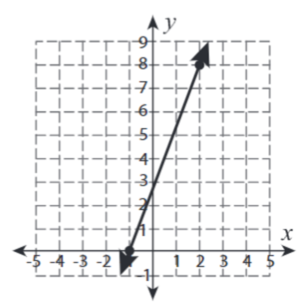
c) 

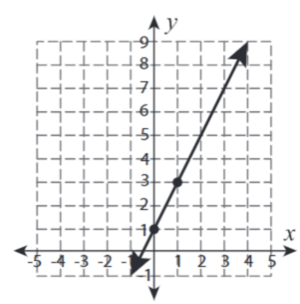
d) 

Which of the following graph represents the equation $y = 7x + 1$?

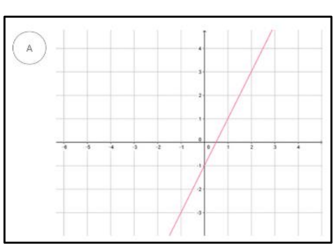
a) 

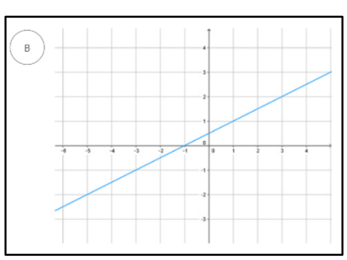
b) 

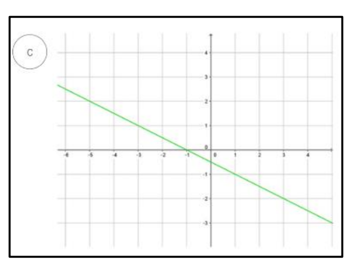
c) 

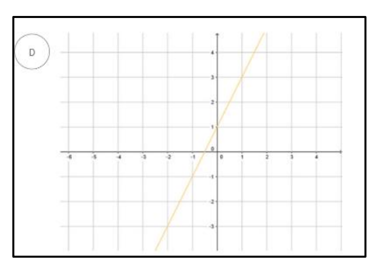
d) 

Which of the following represents the graph of the line $x - 2y = -1$?

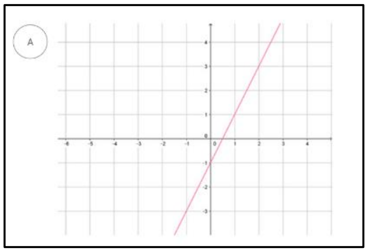


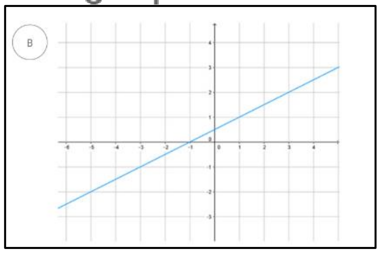


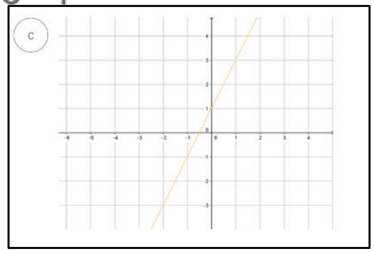


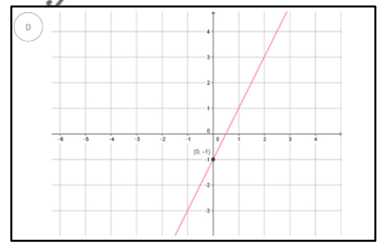


Which of the following represents the graph of the line $2x - y = -1$?



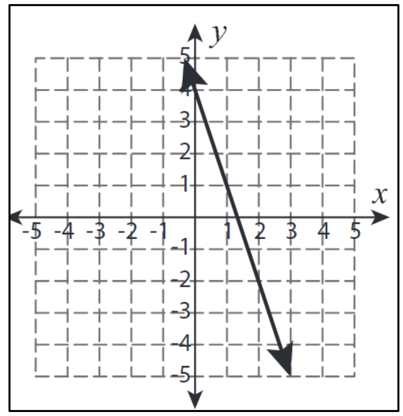






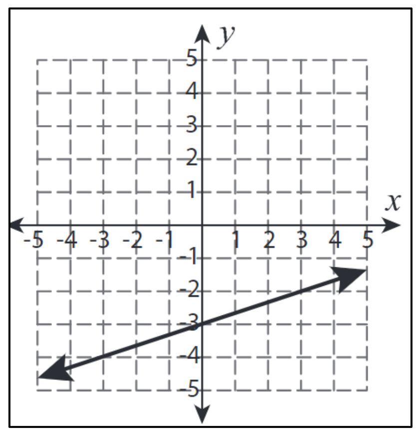
Which of the following equation represents the line on the graph?

a) $y = x + 4$ b) $y = 2x - 4$ c) $y = -3x + 4$



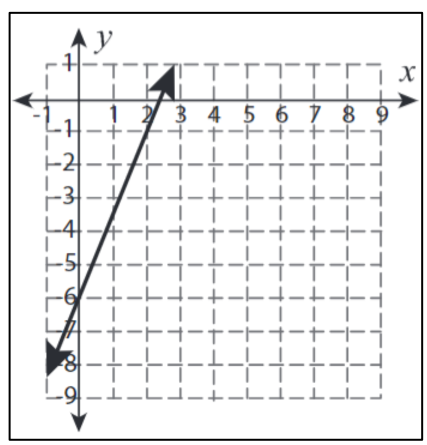
Which of the following equation represents the line on the graph?

a) $y = -2x + 3$ b) $y = \frac{1}{3}x - 3$ c) $y = \frac{1}{4}x + 3$



Which of the following equation represents the line on the graph?

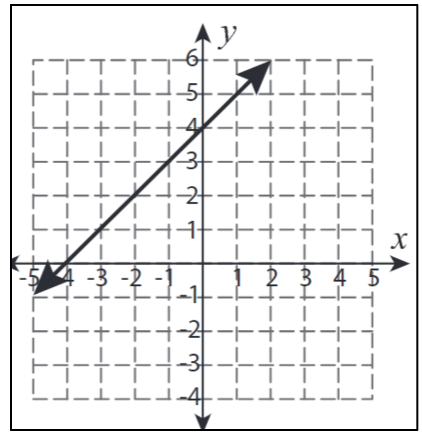
a) $y = 3x - 6$ b) $y = \frac{5}{2}x - 6$ c) $y = -\frac{1}{2}x - 6$



Mult

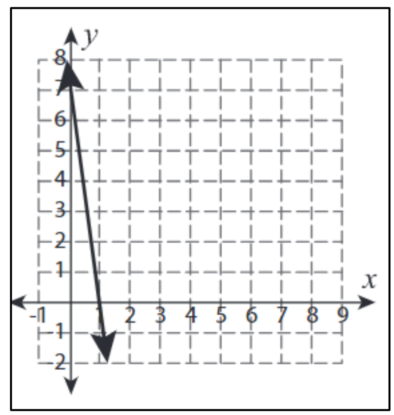
Which of the following equation represents the line on the graph?

a) $y = x + 4$ b) $y = 5x - 4$ c) $y = -4x + 4$



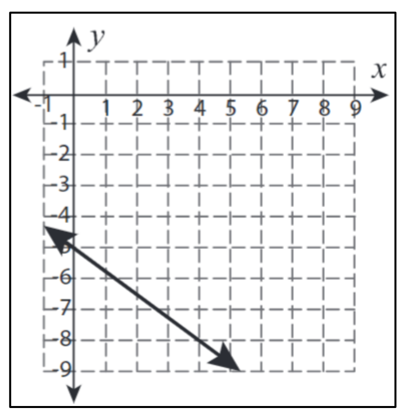
Which of the following equation represents the line on the graph?

a) $y = -7x + 7$ b) $y = 8x - 7$ c) $y = 4x + 7$



Which of the following equation represents the line on the graph?

a) $y = 6x + 5$ b) $y = \frac{5}{4}x + 5$ c) $y = -\frac{3}{4}x - 5$



Mult

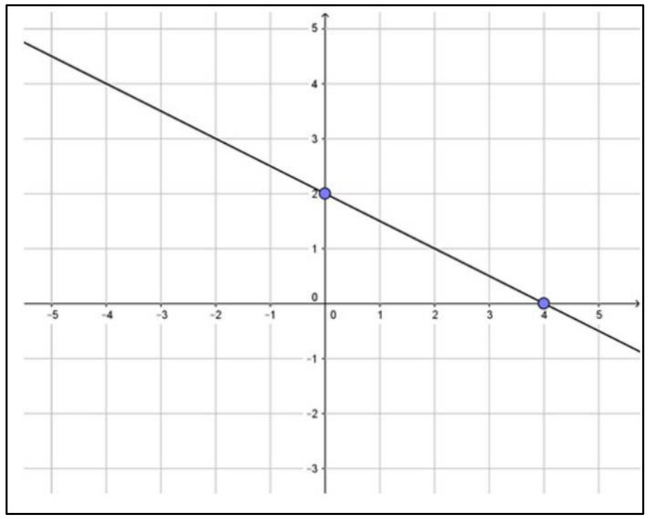
Which of the following equations represents the graph given?

A $x + 2y = 4$

B $2x + y = 4$

C $x + y = 2$

D $2x + 2y = 4$



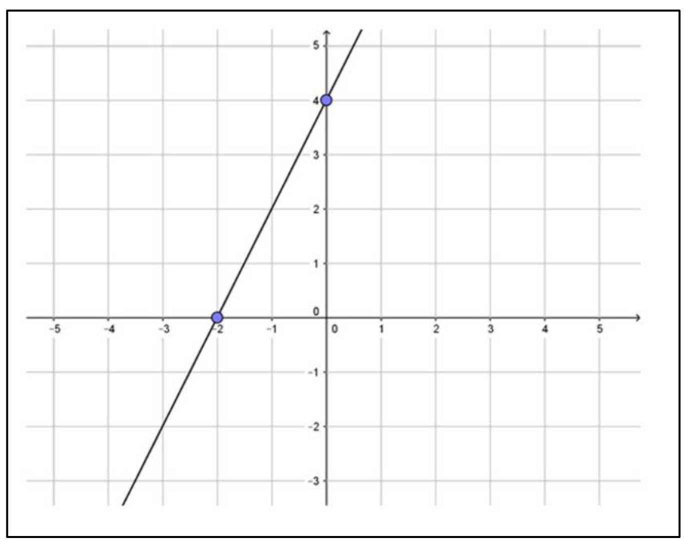
Which of the following equations represents the graph given?

A $x - 2y = 4$

B $2x - y = 4$

C $x - 2y = -4$

D $2x - y = -4$



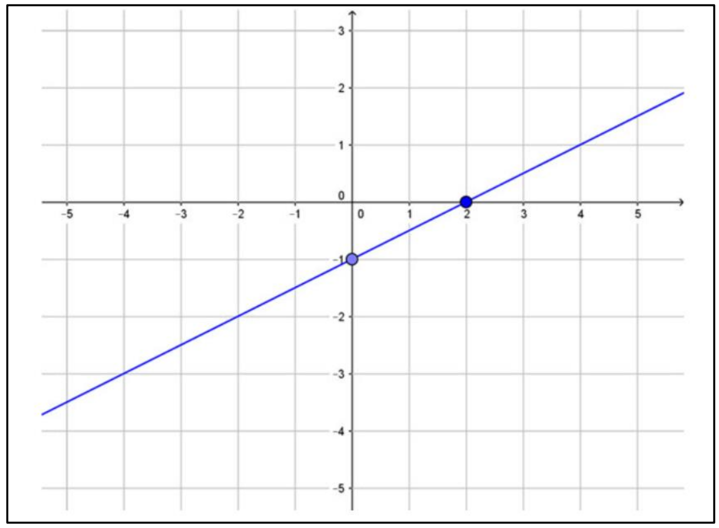
Which of the following equations represents the graph given?

A $-2x + y = -2$

B $2x + y = -2$

C $-x + 2y = -2$

D $x - 2y = -2$



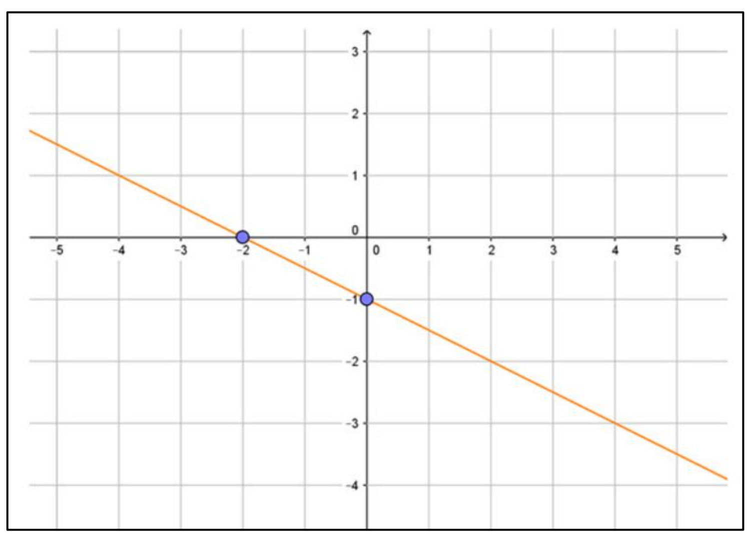
Which of the following equations represents the graph given?

A $-2x - y = -2$

B $2x - y = 2$

C $-x - 2y = -2$

D $-x - 2y = 2$



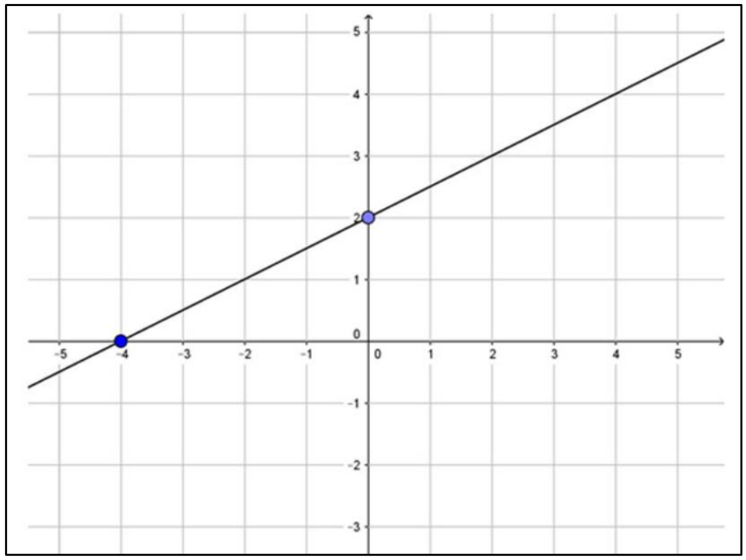
Which of the following equations represents the graph given?

A $x - 2y = 4$

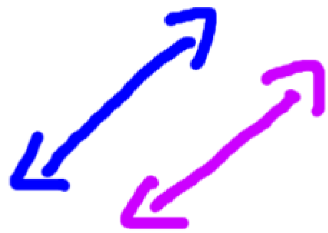
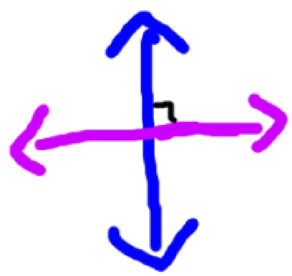
B $x - y = 2$

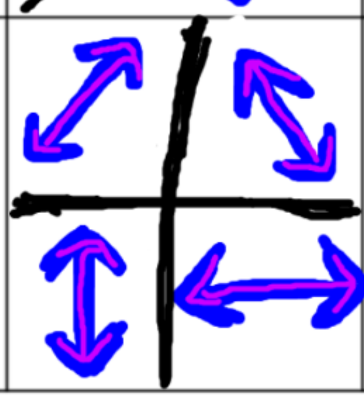
C $x - 2y = -4$

D $x - y = -2$



PARALLEL & PERPENDICULAR EQUATONS NOTES

TYPE OF LINES	PICTURE	TYPE OF SLOPE	EXAMPLES
Parallel		Parallel lines have the same slope	$y=3x-1$ $y=3x+5$
Perpendicular		Perpendicular lines have negative reciprical slopes (multiplied together =-1)	$y=\frac{2}{3}x+7$ $y=-\frac{3}{2}x+2$

TYPE OF LINES	PICTURE	TYPE OF SLOPE	EXAMPLES
Neither		lines are not parallel or perpendicular and they do not have the same y-intercept	$y=2x-2$ $y=-2x+2$ $y=\frac{1}{4}x+3$ $y=-\frac{1}{4}x+2$
Same		Both slopes and y-interepts are the same	$y=7x+9$ $y=7x+9$

Determine whether the lines are Parallel, Perpendicular or Neither

$$y = 4x - 2$$
$$y = -\frac{1}{4}x + 4$$

____

$$y = -\frac{1}{4}x - 1$$
$$y = -4x + 1$$

____

$$4y + 2x = 12$$
$$y = 2x - 17$$

____

$$y = -4x - 5$$
$$y = -4x + 5$$

____

$$-\frac{2}{3}x + 2y = -8$$
$$3y = x - 15$$

____

$$-6x + y = 1$$
$$-6x + 3y = -9$$

____

$$y = \frac{3}{5}x + 1$$
$$5y = 3x - 2$$

____

$$4x - 3y = 2$$
$$4y - 3x = 20$$

____

$$y = 2x - 2$$
$$y = -2x + 2$$

____

Write the equation of a line that is parallel to $y = 10x - 3$ and goes through the point (1, 5).

Write the equation of a line that is perpendicular to $y = 1/3\ x + 3$ and goes through the point $(-1, -2)$.

Write the equation of a line that is parallel to $y = -4x - 5$ and goes through the point $(0, -1)$.

Write the equation of a line that is perpendicular to $y = -5/8x$ and goes through the point $(-5, -3)$.

Write the equation of a line that is parallel to $y = 1/5x - 3$ and goes through the point $(1, 1)$.

Write the equation of a line that is perpendicular to $y = -3/2x$ and goes through the point $(3, 5)$.

(-4, -9), (1, -1),
(-8, 10), (2, -6)

(-8, 3), (-12, -2),
(-7, -3), (-2, -7)

(13, -9), (8, 1),
(-10, 9), (-7, 3)

P & P